



## Innovation of Environmental Remediation Materials

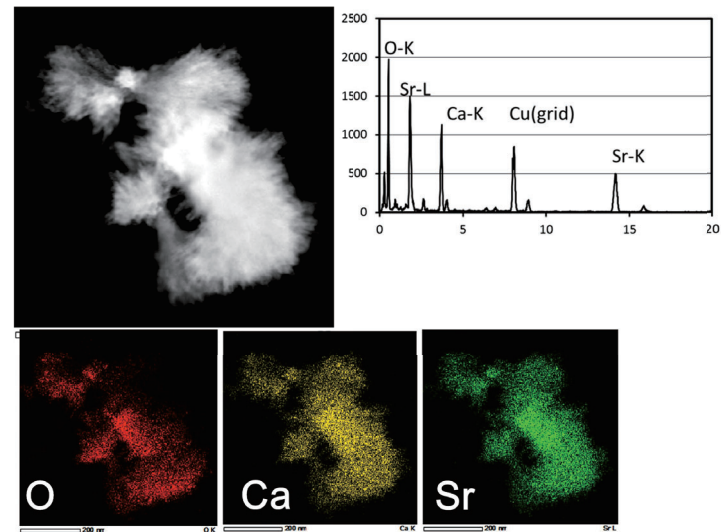
Laboratory for Advanced Nuclear

<http://www.lane.iir.titech.ac.jp/member/data/ohnuki.html>

- Innovation of bio-remediation
- Environmental behaviors of radionuclides
- Waste disposal

For remediation of contamination after Fukushima accident and for waste disposal, environmental behavior of radionuclides and bio-remediation have been studied.

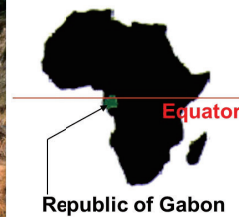
Reaction field at solid-solution boundary of minerals and microorganisms dominates migration of metal ions in earth's surface. We challenge development of advanced remediation and solidification methods.



### Innovation of bio-remediation

Using microbe's ability to form minerals, metal ions are eliminated from the contaminated groundwater. This figure shows remediation of Sr by Ca carbonate.

**Oklo U deposit:**  
Natural nuclear reactor at 2 billion Y before.



Reactor zone

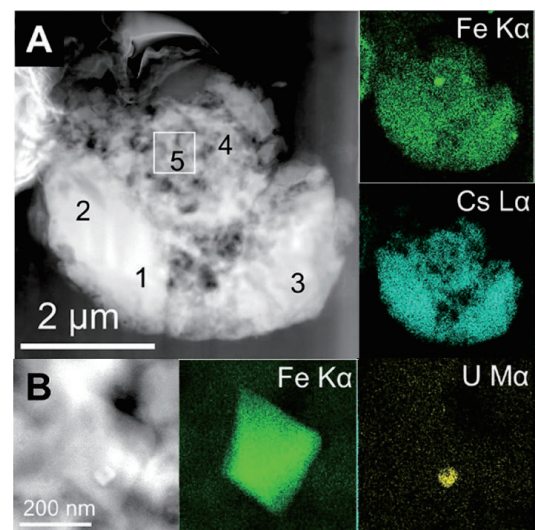


Preserved #2 reactor



### Study on waste disposal

Natural reactor at 2 billion years before .produced many kinds of radionuclides involving Pu. The investigation of such uranium mine clarify long-term behavior of radionuclides after disposal in geological formation.



### Environmental behaviors of radionuclides

After Fukushima Daiichi Nuclear Power Plant accident, microparticles containing highly concentrated <sup>137</sup>Cs (CsMP) was released. These CsMPs are one of the keys to understand property of nuclear debris. We found that some of the debris involved U in Fe minerals, indicating that CsMP was produced during the accident.